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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,999	04/02/2004	Jim Vogeley	4209-41	7278
23117 7590 06/13/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER SAN MARTIN, JAYDI A	
			ART UNIT 2834	PAPER NUMBER
			MAIL DATE 06/13/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/815,999

Applicant(s)

VOGELEY, JIM

Examiner

Jaydi A. San Martin

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-11, 15-54, 57-61, 65-91, 93-107, 110-114 and 118-152 is/are pending in the application.
- 4a) Of the above claim(s) 18-47, 65-90, 95-99 and 118-152 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-11, 15-17, 48-54, 57-61, 91, 93, 94, 100-107 and 110-114 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/07, 12/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. The indicated allowability of claims 14, 67 and 117 is withdrawn in view of the newly discovered reference(s) to Riley (US 6252512). Rejections based on the newly cited reference(s) follow.

### ***Claim Objections***

2. Claims 91, 93 and 94 depend upon cancelled claim 63. For examination purposes the Examiner considered the claims to be dependent from claim 48. Appropriate correction is required.

3. Claim 107 recites the limitation "during real time operation of the pump" in line 2. There is insufficient antecedent basis for this limitation in the claim. The examiner has given no patentable weight to the limitation.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 7, 9-10, 48, 52-54, 57, 59-60, 62, 63, 93, 94, 100, 101, 105-107 and 112-113, are rejected under 35 U.S.C. 102(b) as being anticipated by Riley (US 6,252,512).

Riley discloses drive circuit that produces a drive signal for a device having a piezoelectric actuator (24) and applies the drive signal to the piezoelectric actuator, wherein the drive circuit is arranged to change dynamically one of the voltage and frequency of the drive signal in accordance with an input signal to the drive circuit wherein the input signal is obtained from a user input device. Specifically, Riley discloses changing the frequency of the signal (col. 5, second paragraph) and that the input signal could be obtained by sensing the pressure (as required in claim 7 of the instant application), mass of an object and/or from a personal computer (columns 5 and 6).

With regards to claims 2 and 4, Riley discloses the signal wave having a sine wave shape, which will be changed when the voltage or the frequency are changed.

Regarding claim 3, the signal comprises charge packets.

Regarding claims 7, 9 and 10, the resonance frequency of a piezoelectric element is changed upon application of a force/pressure. In the invention disclosed by Riley, a sensor for sensing mass or pressure is used, it is known that many force, mass and pressure sensors uses piezoelectric elements. Therefore, it is expected that the application of a force will change the resonance frequency of the piezoelectric element.

Claims 48, 52-54, 57, 59-60, 62, 63, 93, 94, 100, 101, 105-107, 112-113 are rejected for the same reasons as explained above, since the method of driving the piezoelectric and the device itself are inherent in the disclosure of Riley.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8, 11, 58, 61, 111 and 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley.

Araki discloses a driving circuit for driving a piezoelectric device based on a sensed parameter.

However, Riley fails to disclose such parameter being temperature.

The broad teaching of Riley is that a drive signal could be controlled and determined based on a sensed parameter. It is the Examiner's position that it would have been obvious to one of ordinary skill in the art to sense a parameter, other than distance and such as temperature, to determine and control the driving signal as necessitated by the specific requirements of a particular application.

6. Claims 15-17, 49-51, 91 and 102-104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley.

Riley discloses a driving circuit for driving a piezoelectric device based on a sensed parameter, but fails to disclose the piezoelectric device being a piezoelectric pump. Riley also fails to disclose the driving signal varying over time to deliver a non-continuous dosage of fluid.

First, it should be noted that it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the

claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Ex Parte Masham, 2 USPQ F.2d 1647 (1987).

Second, since Riley does not disclose the piezoelectric device being a piezoelectric pump, the deliver of a non-continuous dosage of fluid is not disclosed either. However, Riley's driving signal depending upon a sensed parameter would allow a non-continuous dosage of fluid to be delivered in the case where the driven piezoelectric element is a piezoelectric pump. Therefore, it would have been obvious to use the driving control system as disclosed by Riley to drive a piezoelectric pump and to deliver a non-continuous dosage of fluid. Moreover, Riley's invention is directed to a monitoring system that evaluates the response of a piezoelectric element. It is old and known in the art of piezoelectrics to use piezoelectric pumps and the advantages are widely acknowledged.

### ***Conclusion***


7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaydi A. San Martin whose telephone number is 571-272-2018. The examiner can normally be reached on M-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jaydi A. San Martin  
Patent Examiner-Class 310  
Art Unit 2834

6/10/07